

Claims

1. An electromechanical plug device comprising a plug connector, which is adapted for electrical and mechanical connection with a mating plug connector and which possesses an outgoing cable part having a circuit substrate provided for electrical connection with an outgoing cable and furthermore possesses a contact carrying drum supported for rotation about its longitudinal axis, the contact carrying drum having first plug contacts, which are accessible from the front axial side facing away from the outgoing cable part, of the contact carrying drum in order as part of a plugging movement, taking place in the direction of the longitudinal axis of the contact carrying drum, to be able to be contacted electrically by second plug contacts of the mating plug connector and which on the axial rear side, facing the outgoing cable part, of the contact carrying drum are provided with first abutment type contact faces, which irrespectively the instantaneous relative position of rotation of the outgoing cable part and the contact carrying drum are contacted or are able to be contacted by second abutment type contact faces provided axially oppositely on the circuit substrate.

2. The plug device as set forth in claim 1, wherein the first and/or second abutment type contact faces are at least partially circular or circularly arcuate with a center of curvature on the longitudinal axis of the contact carrying drum.

3. The plug device as set forth in claim 2, wherein the other abutment type contact faces cooperating with the partially circular or circularly arcuate abutment type contact faces are formed by resilient button contact elements.

4. The plug device as set forth in claim 2, wherein the partially circular or circularly arcuate abutment type contact faces are arranged concentrically to each other.

5. The plug device as set forth in claim 4, wherein the circular or circularly arcuate abutment type contact faces are at the same level or at different levels in the axial direction.

6. The plug device as set forth in claim 5, wherein the circuit substrate is a printed circuit board or an 3D-MID support structure.

7. The plug device as set forth in claim 1, allowing a relative, angularly unlimited rotation between the outgoing cable part and the contact carrying drum.

8. The plug device as set forth in claim 1, wherein the contact carrying drum is able to be moved in the direction of its longitudinal axis with limited extend in relation to the outgoing cable part so that it is able to be shifted away from the mating plug connector to be connected toward the circuit substrate, the first and the second abutment type contact faces being thrust against each other.

9. The plug device as set forth in claim 8, comprising a tooth engaging means is provided on the contact carrying drum and more particularly on its axial rear side, such engaging means being adapted to make an interlocking and rotationally locking engagement with the outgoing cable part in the state of the drum acted upon by the mating plug connector.

10. The plug device as set forth in claim 1, wherein the contact carrying drum is a 3D-MID component whose first plug contacts are at least in part constituted by electrical conductors produced by MID technology.

11. The plug device as set forth in claim 1, wherein the contact carrying drum possesses channel-like plug sockets open toward the axial front side, which are adapted to receive pin-like second plug contacts of the mating plug connector and which peripherally are furnished with at least one electrical conductor belonging to the first plug contacts, which conductor is able to be electrically contacted by the inserted second plug contact.

12. The plug device as set forth in claim 11, wherein the channel-like plug sockets are delimited by resiliently elastic holding means placed at the outer periphery of the contact carrying drum, such holding means being able to be acted upon by the connected mating plug connector on the outside so that they may thrust the pin-like second plug contact, located in the respective plug socket inward radially into contact with the electrical conductors of the first plug contacts.

13. The plug device as set forth in claim 11, wherein the channel-like plug sockets have a trapezium-like cross section, both their base area and also their flanks converging toward the base area being clad with an electrical conductor of the first signal contacts.

14. The plug device as set forth in claim 11, wherein the plug sockets taper in cross section toward the axial rear side and toward the contact carrying drum so that the pin-like second plug contacts are thrust, during the connecting operation, progressively against

laterally placed electrical conductors of the first plug contacts.

15. The plug device as set forth in claim 1, wherein the contact carrying drum has contact pins belonging to the first plug contacts, which contact pins project at the axial front side and are designed to fit into sleeve-like second plug contacts of the mating plug connector.

16. The plug device as set forth in claim 1, wherein the first and/or the second abutment type contact faces are constituted by a permanently elastic contact material, as for instance an electrically conductive sealant or a conductive adhesive.

17. The plug device as set forth in claim 1, wherein the outgoing cable part comprises a housing consisting of plastic material, in which the circuit substrate is embedded, more especially by having the material molded about it, and which possesses a drum socket leading to the contact making region with the second abutment type contact faces, into which socket the contact carrying drum is inserted, with its axial rear side to the fore, so as to be rotatable while being axially tethered.

18. The plug device as set forth in claim 17, wherein on the housing within the drum socket a first annular sealing projection, concentrically surrounding the contact carrying drum, is formed, against which projection a sleeve-like wall section, surrounding contact carrying drum, of the mating plug connector is thrust in the connected state with a sealing action.

19. The plug device as set forth in claim 17, comprising a second annular seal projection, surrounding the contact carrying drum and in sealing contact with it,

said seal projection being formed on the housing within the drum socket.

20. The plug device as set forth in claim 1, comprising a contact carrying drum with a multi-part support body with a core which is initially completely metallized and to produce the first signal contacts is machined, on which core two head parts are mounted from two opposite sides, of which head parts the head part located at the axial rear side bears on the first abutment type contact faces.

21. The plug device as set forth in claim 1, wherein the plug connector is designed in the form of an elbow connector.